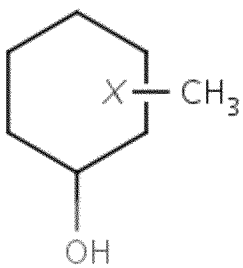
Methylcyclohexanol



CASRN: 25639-42-3

For more information, search the NLM HSDB database.

Human Health Effects:

Human Toxicity Excerpts:
/SIGNS AND SYMPTOMS/ Short term exposure: Methylcyclohexanol can affect you when breathed in and by passing through your skin. Irritates the eyes and the skin. High levels of the vapor may cause irritation of eyes and upper respiratory tract. Repeated or prolonged exposure can cause headaches, irritation of the eyes, nose, and throat, and can also cause a skin rash. High

exposures from skin contact or inhalation may cause damage to the heart, liver, kidneys, and lungs, and may result in death. Long term exposure: repeated or prolonged contact with skin may cause skin rash.
[Pohanish, R.P. (ed). Sittig's Handbook of Toxic and Hazardous Chemical Carcinogens 5th Edition Volume 1: A-H,Volume 2: I-Z. William Andrew, Norwich, NY 2008, p. 1687] **PEER REVIEWED**

/SIGNS AND SYMPTOMS/ Headaches and irritation of eye and upper respiratory tract may result from prolonged exposure to vapor. Prolonged contact of liquid with skin results in irritation...
[International Labour Office. Encyclopedia of Occupational Health and Safety. Vols. I&II. Geneva, Switzerland: International Labour Office, 1983., p. 111] **PEER REVIEWED**

/SIGNS AND SYMPTOMS/ Headache and irritation of the ocular and upper respiratory membranes may result from prolonged exposures at excessive concentrations.
[American Conference of Governmental Industrial Hygienists. Documentation of the Threshold Limit Values and Biological Exposure Indices. 5th ed. Cincinnati, OH: American Conference of Governmental Industrial Hygienists, 1986., p. 385] **PEER REVIEWED**

/CASE REPORTS/ After examining several workers who had been exposed to cellulose solvent containing methylcyclohexanol ... /it was/ concluded that few of them had slightly but significantly diminished total number of leukocytes in peripheral blood streams, while 1 had a slight relative lymphocytosis.
[Clayton, G. D. and F. E. Clayton (eds.). Patty's Industrial Hygiene and Toxicology: Volume 2A, 2B, 2C: Toxicology. 3rd ed. New York: John Wiley Sons, 1981-1982., p. 4652] **PEER REVIEWED**

/OTHER TOXICITY INFORMATION/ Toxic by ingestion.
[Lewis, R.J. Sr.; Hawley's Condensed Chemical Dictionary 15th Edition. John Wiley & Sons, Inc. New York, NY 2007., p. 824] **PEER REVIEWED**

Skin, Eye and Respiratory Irritations:
Exposure to vapors can produce irritation to the eyes, skin, and mucous membranes. Methyl cyclohexanol is easily detected at airborne concn of 500 ppm, a concn that can produce irritant effects. /From table/
[Sullivan, J.B. Jr., G.R. Krieger (eds.). Hazardous Materials Toxicology-Clinical Principles of Environmental Health. Baltimore, MD: Williams and Wilkins, 1992., p. 1107] **PEER REVIEWED**

Probable Routes of Human Exposure:
Occupational exposure to methylcyclohexanol may occur through inhalation and dermal contact with this compound at workplaces where methylcyclohexanol is produced or used. Monitoring and use data indicate that the general population may be exposed to methylcyclohexanol via ingestion of drinking water and dermal contact with consumer products containing methylcyclohexanol. (SRC)
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Emergency Medical Treatment:

Emergency Medical Treatment:

EMT Copyright Disclaimer:

The following Overview, *** CYCLOHEXANOL ***, is relevant for this HSDB record chemical.

Life Support:

o This overview assumes that basic life support measures have been instituted.

Clinical Effects:

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0.2.1 SUMMARY OF EXPOSURE
   0.2.1.1 ACUTE EXPOSURE
     A)  Exposure may occur by inhalation, ingestion, or
         percutaneous routes. Data on toxic effects in humans
         are limited. Cyclohexanol is an eye, nose, throat, and
         skin irritant. Central nervous system depression may
         occur.
     B)  Signs and symptoms of exposure may include seizures,
         ataxia, lacrimation, corneal necrosis, salivation,
         nausea, vomiting, and diarrhea. Kidney, liver, and
         vascular injury and myocardial necrosis have been
         reported in experimental animals.
  0.2.3 VITAL SIGNS
  0.2.4 HEENT
   0.2.4.1 ACUTE EXPOSURE
     A)  Conjunctivitis, lacrimation, and irritation of mucous
         membranes may occur.
  0.2.5 CARDIOVASCULAR
   0.2.5.1 ACUTE EXPOSURE
     A)  Myocardial necrosis was observed in animals.
  0.2.7 NEUROLOGIC
   0.2.7.1 ACUTE EXPOSURE
     A)  Headache, tremor, and CNS depression may occur.
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0.2.8 GASTROINTESTINAL
0.2.8.1 ACUTE EXPOSURE
A) Nausea and vomiting have been reported.
0.2.9 HEPATIC
0.2.9.1 ACUTE EXPOSURE
A) Liver damage was observed in animals.
0.2.10 GENITOURINARY
0.2.10.1 ACUTE EXPOSURE
A) Kidney damage was observed in animals.
0.2.14 DERMATOLOGIC
0.2.14.1 ACUTE EXPOSURE
A) Irritation and defatting of the skin may occur.
0.2.20 REPRODUCTIVE HAZARDS
A) Fertility was reduced in male rats and gerbils following daily ingestions of cyclohexanol.
0.2.21 CARCINOGENICITY
0.2.21.1 IARC CATEGORY
A) IARC Carcinogenicity Ratings for CAS108-93-0 (IARC Working Group on the Evaluation of Carcinogenic Risks to Humans, 2006; IARC Working Group on the Evaluation of Carcinogenic Risks to Humans, 2007; IARC Working Group on the Evaluation of Carcinogenic Risks to Humans, 2010; IARC Working Group on the Evaluation of Carcinogenic Risks to Humans, 2010a; IARC Working Group on the Evaluation of Carcinogenic Risks to Humans, 2008; IARC, 2004):
1) Not Listed
0.2.22 GENOTOXICITY
A) When tested in several strains of Salmonella typhimurium, cyclohexanol was NOT mutagenic in concentrations of 500 mcg/plate, either in the presence or absence of a rat liver homogenate activation system (HSDB , 2002).
B) A cytogenetic effect was reported in human leukocyte cells with a cyclohexanol dose of 100 mcmol/L (RTECS, 2002).

Laboratory:

A) Monitor kidney, liver, and cardiac function.

Treatment Overview:

0.4.2 ORAL EXPOSURE
A) Emesis is NOT indicated due to risk of CNS depression.
B) ACTIVATED CHARCOAL: Administer charcoal as a slurry (240 mL water/30 g charcoal). Usual dose: 25 to 100 g in adults/adolescents, 25 to 50 g in children (1 to 12 years), and 1 g/kg in infants less than 1 year old.
C) DILUTION: Immediately dilute with 4 to 8 ounces (120 to 240 mL) of water or milk (not to exceed 4 ounces/120 mL in a child).
D) SEIZURES: Administer a benzodiazepine IV; DIAZEPAM (ADULT: 5 to 10 mg, repeat every 10 to 15 min as needed. CHILD: 0.2 to 0.5 mg/kg, repeat every 5 min as needed) or LORAZEPAM (ADULT: 2 to 4 mg; CHILD: 0.05 to 0.1 mg/kg).
1) Consider phenobarbital or propofol if seizures recur after diazepam 30 mg (adults) or 10 mg (children > 5 years).
2) Monitor for hypotension, dysrhythmias, respiratory depression, and need for endotracheal intubation.

Evaluate for hypoglycemia, electrolyte disturbances, hypoxia.

0.4.3 INHALATION EXPOSURE

A) INHALATION: Move patient to fresh air. Monitor for respiratory distress. If cough or difficulty breathing develops, evaluate for respiratory tract irritation, bronchitis, or pneumonitis. Administer oxygen and assist ventilation as required. Treat bronchospasm with inhaled beta2 agonist and oral or parenteral corticosteroids.

0.4.4 EYE EXPOSURE

A) DECONTAMINATION: Irrigate exposed eyes with copious amounts of room temperature water for at least 15 minutes. If irritation, pain, swelling, lacrimation, or photophobia persist, the patient should be seen in a health care facility.

0.4.5 DERMAL EXPOSURE

A) OVERVIEW

1) DECONTAMINATION: Remove contaminated clothing and wash exposed area thoroughly with soap and water. A physician may need to examine the area if irritation or pain persists.

Range of Toxicity:

A) TLV-TWA - 50 ppm (200 mg/m(3))

[Rumack BH POISINDEX(R) Information System Micromedex, Inc., Englewood, CO, 2014; CCIS Volume 160, edition expires May, 2014. Hall AH & Rumack BH (Eds): TOMES(R) Information System Micromedex, Inc., Englewood, CO, 2014; CCIS Volume 160, edition expires May, 2014.] **PEER REVIEWED**

Antidote and Emergency Treatment:

Immediate first aid: Ensure that adequate decontamination has been carried out. If patient is not breathing, start artificial respiration, preferably with a demand-valve resuscitator, bag-valve-mask device, or pocket mask, as trained. Perform CPR as necessary. Immediately flush contaminated eyes with gently flowing water. Do not induce vomiting. If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain an open airway and prevent aspiration. Keep patient quiet and maintain normal body temperature. Obtain medical attention. /Higher alcohols (>3 carbons) and related compounds/

[Currance, P.L. Clements, B., Bronstein, A.C. (Eds).; Emergency Care For Hazardous Materials Exposure. 3Rd edition, Elsevier Mosby, St. Louis, MO 2005, p. 233] **PEER REVIEWED**

Basic Treatment: Establish a patent airway (oropharyngeal or nasopharyngeal airway, if needed). Suction if necessary. Watch for signs of respiratory insufficiency and assist ventilations if necessary. Administer oxygen by nonrebreather mask at 10 to 15 L/min. Monitor for shock and treat if necessary ... . Monitor for pulmonary edema and treat if necessary ... . Anticipate seizures and treat if necessary ... . For eye contamination, flush eyes immediately with water. Irrigate each eye continuously with 0.9% saline (NS) during transport ... . Do not use emetics. For ingestion, rinse mouth and administer 5 ml/kg up to 200 ml of water for dilution if the patient can swallow, has a strong gag reflex, and does not drool. Administer activated charcoal ... . /Higher alcohols (>3 carbons) and related compounds/

[Currance, P.L. Clements, B., Bronstein, A.C. (Eds).; Emergency Care For

Hazardous Materials Exposure. 3Rd edition, Elsevier Mosby, St. Louis, MO 2005, p. 232-3] **PEER REVIEWED**

Advanced Treatment: Consider orotracheal or nasotracheal intubation for airway control in the patient who is unconscious, has severe pulmonary edema, or is in severe respiratory distress. Positive-pressure ventilation techniques, with a bag-valve-mask device, may be beneficial. Consider drug therapy for pulmonary edema ... . Monitor cardiac rhythm and treat arrhythmias as necessary ... . Start IV administration of D5W /SRP: "To keep open", minimal flow rate/. Use 0.9% saline (NS) or lactated Ringer's (LR) if signs of hypovolemia are present. For hypotension with signs of hypovolemia, administer fluid cautiously. Consider vasopressors if patient is hypotensive with a normal fluid volume. Watch for signs of fluid overload ... . Monitor for signs of hypoglycemia (decreased LOC, tachycardia, pallor, dilated pupils, diaphoresis, and/or dextrose strip or glucometer readings below 50 mg) and administer 50% dextrose if necessary ... . Treat seizures with diazepam or lorazepam ... . Use proparacaine hydrochloride to assist eye irrigation ... . /Higher alcohols (>3 carbons) and related compounds/
[Currance, P.L. Clements, B., Bronstein, A.C. (Eds).; Emergency Care For Hazardous Materials Exposure. 3Rd edition, Elsevier Mosby, St. Louis, MO 2005, p. 233] **PEER REVIEWED**

Animal Toxicity Studies:

Non-Human Toxicity Excerpts:
/LABORATORY ANIMALS: Acute Exposure/ ... The undiluted liquid produced irritancy on repeated application to rabbit skin. The acute oral toxicity was moderate in rats. Single doses given orally, dermally or by injection affected the central nervous system of laboratory animals. Exposure by the oral, dermal, and inhalation routes caused damage to the heart, liver, spleen, kidneys, brain, and blood system of rabbits.
[The British Industrial Biological Research Association;Toxicity profile (1988)] **PEER REVIEWED**

/LABORATORY ANIMALS: Acute Exposure/ Oral admin of lethal dose ... /or more/ to rabbits ... induced severe acute ... parenchymal & vascular changes in heart, liver & kidneys, & ... vascular damage in lungs ... These lesions were accompanied by cerebral edema & congestion. Diffuse degenerative changes in liver ... only evidence of intoxication in ... sublethal oral dose ... .
[Clayton, G. D. and F. E. Clayton (eds.). Patty's Industrial Hygiene and Toxicology: Volume 2A, 2B, 2C: Toxicology. 3rd ed. New York: John Wiley Sons, 1981-1982., p. 4651] **PEER REVIEWED**

/LABORATORY ANIMALS: Acute Exposure/ Application of large doses ... upon intact skin of rabbits induced fatal poisoning characterized by tremors, /SRP: CNS depression/ & hypothermia.
[Clayton, G. D. and F. E. Clayton (eds.). Patty's Industrial Hygiene and Toxicology: Volume 2A, 2B, 2C: Toxicology. 3rd ed. New York: John Wiley Sons, 1981-1982., p. 4652] **PEER REVIEWED**

/LABORATORY ANIMALS: Acute Exposure/ Rabbits exposed to 2.3 mg/L of air show symptoms of irritation of eyes. /o-Methyl cyclohexanol/

[Grant, W.M. Toxicology of the Eye. 3rd ed. Springfield, IL: Charles C. Thomas Publisher, 1986., p. 614] **PEER REVIEWED**

/LABORATORY ANIMALS: Acute Exposure/ ... The minimum lethal oral dose of methylcyclohexanol in rabbits to be between 1.25 and 2 g/kg; rapid /SRP: CNS depression/ and convulsions preceded death. These lethal doses induced severe, acute parenchymal and vascular damage in the heart, liver, and kidneys and vascular damage in the lungs. These lesions were generally accompanied by cerebral edema and congestion. Sublethal doses caused /SRP: CNS depression/ with clonic/tonic convulsions, salivation, and lacrimation. Animals given sublethal doses showed liver damage on autopsy.
[American Conference of Governmental Industrial Hygienists, Inc. Documentation of the Threshold Limit Values and Biological Exposure Indices. 6th ed. Volumes I, II, III. Cincinnati, OH: ACGIH, 1991., p. 969] **PEER REVIEWED**

/LABORATORY ANIMALS: Acute Exposure/ Acute (cutaneous) neurotoxic effects of methylcyclohexanol (2-, 3-, and 4-isomers) include /SRP: CNS depression/ and tremor in animals. /From table/
[O'Donoghue, J.L. (ed.). Neurotoxicity of Industrial and Commercial Chemicals. Volume I. Boca Raton, FL: CRC Press, Inc., 1985., p. 117] **PEER REVIEWED**

/LABORATORY ANIMALS: Subchronic or Prechronic Exposure/ The metabolism of methylcyclohexane was studied in rats. Male Fischer 344 rats were given 0 or 0.8 g/kg methylcyclohexane by oral gavage every other day for 2 wk. Urine samples were collected during the first 48 hr of dosing. They were analyzed as is for metabolites or treated with glucuronidase and sulfatase first. The rats were /sacrificed/ 24 hr after the last dose, the kidneys were removed, sliced, and examined for histopathological changes. Methylcyclohexane metabolites identified in urine after hydrolysis with glucuronidase and sulfatase were 2(t)-hydroxy-4(c)-methylcyclohexanol, 2(c)-hydroxy-4(t)-methylcyclohexanol, trans-3-methylcyclohexanol, 2(c)-hydroxy-4(c)-methylcyclohexanol, trans-4-methylcyclohexanol and cyclohexylmethanol. 2(t)-hydroxy-4(c)-methylcyclohexanol was found in the /greatest/ amount. No metabolites were detected in samples not treated with glucuronidase and sulfatase. Only slight histopathological evidence of nephrotoxicity was seen in the kidney slices. /Results suggest/ that methylcyclohexane is metabolized primarily to dihydroxy metabolites in rats. The low nephrotoxicity of methylcyclohexane may be due to the lack of side chain branching on the ring structure.
[Parnell MJ et al; Chemosphere 17 (7): 1321-7 (1988)] **PEER REVIEWED**

/LABORATORY ANIMALS: Subchronic or Prechronic Exposure/ Application ... of 5 g portions of mixt of methylcyclohexanol ... /15% by wt/ in potassium oleate, for 1 hr/day ... /for/ 15 days, produced ... temporary erythema & superficial sloughing of skin.
[Clayton, G. D. and F. E. Clayton (eds.). Patty's Industrial Hygiene and Toxicology: Volume 2A, 2B, 2C: Toxicology. 3rd ed. New York: John Wiley Sons, 1981-1982., p. 4652] **PEER REVIEWED**

/LABORATORY ANIMALS: Subchronic or Prechronic Exposure/ Rabbits inhaled 121, 232, or 503 ppm 6 hr/day, 5 days/wk for 10 wk. Salivation, conjunctival irritation, and slight lethargy were noted at 503 ppm, but no such signs of intoxication were recorded at 232 ppm. Microscopic tissue changes in the histology of the liver and kidneys were found in rabbits exposed at 121 ppm ... /SRP: No evidence of specific or general change in cellular elements of peripheral blood/.

[American Conference of Governmental Industrial Hygienists, Inc. Documentation of the Threshold Limit Values and Biological Exposure Indices. 6th ed. Volumes I, II, III. Cincinnati, OH: ACGIH, 1991., p. 969] **PEER REVIEWED**

/LABORATORY ANIMALS: Subchronic or Prechronic Exposure/ Repeated cutaneous application of large doses (20, 25, or 45 mL/application) of methylcyclohexanol /to rabbits/ caused skin irritation and thickening; the highest doses were associated with weakness, tremor, /SRP: CNS depression/, and death.
[American Conference of Governmental Industrial Hygienists, Inc. Documentation of the Threshold Limit Values and Biological Exposure Indices. 6th ed. Volumes I, II, III. Cincinnati, OH: ACGIH, 1991., p. 969] **PEER REVIEWED**

/OTHER TOXICITY INFORMATION/ Studies in experimental animals indicated the central nervous system and probably also the liver and kidneys as target organs of methylcyclohexanol exposure. This is substantiated by the fact that experimental animals exposed to methylcyclohexane also showed effects of the central nervous system.
[Health Council of the Netherlands Committee on updating of occupational exposure limits; Methylcyclohexanol (mixed isomers). Health-based reassessment of occupational exposure limits 15OSH/010 (2000)] **PEER REVIEWED**

/OTHER TOXICITY INFORMATION/ On basis of comparative results of ip injection of the 3 isomeric forms into mice ... /it was/ concluded that o-methylcyclohexanol is more toxic than the other two isomers.
[Clayton, G. D. and F. E. Clayton (eds.). Patty's Industrial Hygiene and Toxicology: Volume 2A, 2B, 2C: Toxicology. 3rd ed. New York: John Wiley Sons, 1981-1982., p. 4651] **PEER REVIEWED**

Non-Human Toxicity Values:
LD50 Rat oral 1660 mg/kg
[Lewis, R.J. Sr. (ed) Sax's Dangerous Properties of Industrial Materials. 11th Edition. Wiley-Interscience, Wiley & Sons, Inc. Hoboken, NJ. 2004., p. 2418] **PEER REVIEWED**

LD50 Rat sc 2900 mg/kg
[Lewis, R.J. Sr. (ed) Sax's Dangerous Properties of Industrial Materials. 11th Edition. Wiley-Interscience, Wiley & Sons, Inc. Hoboken, NJ. 2004., p. 2418] **PEER REVIEWED**

Metabolism/Pharmacokinetics:

Metabolism/Metabolites:
In ... rabbits ... /by oral/ admin, conjugation of the cmpd or a metabolite with both glucuronic & sulfuric acids has been demonstrated by analysis of urine. Some conjugation product with sulfuric acid was found ... in urine of animals exposed to 232 & 503 ppm methylcyclohexanol in air.
[Clayton, G. D. and F. E. Clayton (eds.). Patty's Industrial Hygiene and Toxicology: Volume 2A, 2B, 2C: Toxicology. 3rd ed. New York: John Wiley Sons, 1981-1982., p. 4652] **PEER REVIEWED**

The metabolism of methylcyclohexane was studied in rats. Male Fischer 344 rats were given 0 or 0.8 g/kg methylcyclohexane by oral gavage every other day for 2 wk. Urine samples were collected during the first 48 hr of dosing. They were analyzed as is for metabolites or treated with glucuronidase and sulfatase first. The rats were /sacrificed/ 24 hr after the last dose, the kidneys were removed, sliced, and examined for histopathological changes. Methylcyclohexane metabolites identified in urine after hydrolysis with glucuronidase and sulfatase were 2(t)-hydroxy-4(c)-methylcyclohexanol, 2(c)-hydroxy-4(t)-methylcyclohexanol, trans-3-methylcyclohexanol, 2(c)-hydroxy-4(c)-methylcyclohexanol, trans-4-methylcyclohexanol and cyclohexylmethanol. 2(t)-hydroxy-4(c)-methylcyclohexanol was found in the /greatest/ amount. No metabolites were detected in samples not treated with glucuronidase and sulfatase. Only slight histopathological evidence of nephrotoxicity was seen in the kidney slices. /Results suggest/ that methylcyclohexane is metabolized primarily to dihydroxy metabolites in rats. The low nephrotoxicity of methylcyclohexane may be due to the lack of side chain branching on the ring structure.
[Parnell MJ et al; Chemosphere 17 (7): 1321-7 (1988)] **PEER REVIEWED**

Absorption, Distribution & Excretion:
... Liquid is slowly absorbed through skin. ... Methylcyclohexanol, conjugated with glucuronic acid, is excreted in urine.
[International Labour Office. Encyclopedia of Occupational Health and Safety. Vols. I&II. Geneva, Switzerland: International Labour Office, 1983., p. 111] **PEER REVIEWED**

Rate of excretion of glucuronic acid /SRP: as glucuronide/ in urine of rabbits is correlated directly with concn of methylcyclohexanol in air to which they have been subjected. Twice normal quantity of glucuronic acid /SRP: as glucuronide/ was found in urine of rabbits subjected to 121 ppm of methylcyclohexanol in air.
[Clayton, G. D. and F. E. Clayton (eds.). Patty's Industrial Hygiene and Toxicology: Volume 2A, 2B, 2C: Toxicology. 3rd ed. New York: John Wiley Sons, 1981-1982., p. 4652] **PEER REVIEWED**

Pharmacology:

Environmental Fate & Exposure:

Environmental Fate/Exposure Summary:
Methylcyclohexanol's production and use as a solvent for cellulose esters and ethers and for lacquers resins, oils, and waxes, an antioxidant for lubricants, and a blending agent for special textile soaps and detergents may result in its release to the environment through various waste streams. Methylcyclohexanol is a commercial mixture that contains isomers of 2-, 3-, and 4-methylcyclohexanol, which are expected to behave in a similar manner in the environment. If released to air, a vapor pressure of 1.2 mm Hg at 25 deg C indicates trans-2-cyclohexanol will

exist solely as a vapor in the atmosphere. Vapor-phase trans-2-methylcyclohexanol will be degraded in the atmosphere by reaction with photochemically-produced hydroxyl radicals; the half-life for this reaction in air is estimated to be 1.7 days. Methylcyclohexanol does not contain chromophores that absorb at wavelengths >290 nm and therefore is not expected to be susceptible to direct photolysis by sunlight. If released to soil, trans-2-methylcyclohexanol is expected to have very high mobility based upon a Koc of 34. Volatilization from moist soil surfaces is expected to be an important fate process based upon a Henry's Law constant of 7.58X10-6 atm-cu m/mole for 2-methylcyclohexanol (mixed isomers). trans-2-Methylcyclohexanol may volatilize from dry soil surfaces based upon its vapor pressure. 4-Methylcyclohexanol degraded 94.0% during a 5-day screening test using an acclimated sewage inoculum. Therefore, biodegradation may be an important fate process. If released into water, trans-2-methylcyclohexanol is not expected to adsorb to suspended solids and sediment based upon the estimated Koc. Volatilization from water surfaces is expected to be an important fate process based upon the mixed isomers of 2-methylcyclohexanol's Henry's Law constants. Estimated volatilization half-lives for a model river and model lake are 3.5 days and 42 days, respectively. An estimated BCF of 7.4 suggests the potential for bioconcentration in aquatic organisms is low. Hydrolysis is not expected to be an important environmental fate process since this compound lacks functional groups that hydrolyze under environmental conditions. Occupational exposure to methylcyclohexanol may occur through inhalation and dermal contact with this compound at workplaces where methylcyclohexanol is produced or used. Monitoring and use data indicate that the general population may be exposed to methylcyclohexanol via ingestion of drinking water and dermal contact with consumer products containing methylcyclohexanol. (SRC)
PEER REVIEWED

Probable Routes of Human Exposure:
Occupational exposure to methylcyclohexanol may occur through inhalation and dermal contact with this compound at workplaces where methylcyclohexanol is produced or used. Monitoring and use data indicate that the general population may be exposed to methylcyclohexanol via ingestion of drinking water and dermal contact with consumer products containing methylcyclohexanol. (SRC)
PEER REVIEWED

Artificial Pollution Sources:
Methylcyclohexanol's production and use as a solvent for cellulose esters and ethers and for lacquers(1) resins, oils, and waxes(2), an antioxidant for lubricants, and a blending agent for special textile soaps and detergents(1) may result in its release to the environment through various waste streams(SRC).
[(1) Fisher WB, VanPeppen JF; Kirk-Othmer Encyclopedia of Chemical Technology. (2001). New York, NY: John Wiley & Sons; Cyclohexanol and Cyclohexanone. Online Posting Date: December 4, 2000. (2) Musser MT; Ullmann's Encyclopedia of Industrial Chemistry. 7th ed. (2008). New York, NY: John Wiley & Sons; Cyclohexanol and Cyclohexanone. Online Posting Date: June 15, 2000.] **PEER REVIEWED**

Environmental Fate:
TERRESTRIAL FATE: Methylcyclohexanol is a commercial mixture that contains isomers of 2-, 3-, and 4-methylcyclohexanol, which are expected to have behave in a similar manner in the environment(SRC). Based on a classification scheme(1), an estimated Koc value of 34(SRC), determined from a log Kow of 1.82(2) and a regression-derived equation(3), indicates that trans-2-methylcyclohexanol is expected to have very high mobility in soil(SRC). Volatilization of 2-methylcyclohexanol (mixed isomers) from moist soil surfaces is expected to be an important fate process(SRC) given a Henry's Law constant of 7.58X10-6 atm-cu m/mole(4). trans-2-Methylcyclohexanol is expected to volatilize from dry soil surfaces(SRC) based upon a vapor pressure of 1.2 mm Hg at 25 deg C(5). 4-Methylcyclohexanol degraded 94.0% during a 5-day screening test using an acclimated sewage inoculum(6), suggesting that biodegradation may be an important fate process in soil(SRC).
[(1) Swann RL et al; Res Rev 85: 17-28 (1983) (2) Funasaki N et al; J Chromatogr 361: 33-45 (1986) (3) US EPA; Estimation Program Interface (EPI) Suite. Ver. 4.0. Jan, 2009. Available from, as of May 7, 2010: http://www.epa.gov/oppt/exposure/pubs/episuitedl.htm (4) Altschuh J et al; Chemosphere 39: 1871-87 (1999) (5) Daubert TE, Danner RP; Physical and Thermodynamic Properties of Pure Chemicals Data Compilation. Washington, DC: Taylor and Francis (1989) (6) Pitter P; Water Res 10: 231-5 (1976)] **PEER REVIEWED**

AQUATIC FATE: Methylcyclohexanol is a commercial mixture that contains isomers of 2-, 3-, and 4-methylcyclohexanol, which are expected to have behave in a similar manner in the environment(SRC). Based on a classification scheme(1), an estimated Koc value of 34(SRC), determined from a log Kow of 1.82(2) and a regression-derived equation(3), indicates that trans-2-methylcyclohexanol is not expected to adsorb to suspended solids and sediment(SRC). Volatilization from water surfaces is expected(4) based upon a Henry's Law constant of 7.58X10-6 atm-cu m/mole(5). Using this Henry's Law constant for the mixed isomers of 2-methylcycloehxanol and an estimation method(4), volatilization half-lives for a model river and model lake are 3.5 days and 42 days, respectively(SRC). According to a classification scheme(6), an estimated BCF of 7.4 for trans-2-cyclohexanol(SRC), from its log Kow(2) and a regression-derived equation(7), suggests the potential for bioconcentration in aquatic organisms is low(SRC). 4-Methylcyclohexanol degraded 94.0% during a 5-day screening test using an acclimated sewage inoculum(8), suggesting that biodegradation may be an important fate process in water(SRC).
[(1) Swann RL et al; Res Rev 85: 17-28 (1983) (2) Funasaki N et al; J Chromatogr 361: 33-45 (1986) (3) US EPA; Estimation Program Interface (EPI) Suite. Ver. 4.0. Jan, 2009. Available from, as of May 7, 2010: http://www.epa.gov/oppt/exposure/pubs/episuitedl.htm (4) Lyman WJ et al; Handbook of Chemical Property Estimation Methods. Washington, DC: Amer Chem Soc pp. 15-1 to 15-29 (1990) (5) Altschuh J et al; Chemosphere 39: 1871-87 (1999) (6) Franke C et al; Chemosphere 29: 1501-14 (1994) (7) Meylan WM et al; Environ Toxicol Chem 18: 664-72 (1999) (8) Pitter P; Water Res 10: 231-5 (1976)] **PEER REVIEWED**

ATMOSPHERIC FATE: Methylcyclohexanol is a commercial mixture that contains isomers of 2-, 3-, and 4-methylcyclohexanol, which are expected to have behave in a similar manner in the environment(SRC). According to a model of gas/particle partitioning of semivolatile organic compounds in the atmosphere(1), trans-2-methylcyclohexanol, which has a vapor pressure of 1.2 mm Hg at 25 deg C(2), is expected to exist solely as a vapor in the ambient atmosphere. Vapor-

phase trans-2-methylcyclohexanol is degraded in the atmosphere by reaction with photochemically-produced hydroxyl radicals(SRC); the half-life for this reaction in air is estimated to be 1.7 days(SRC), calculated from its rate constant of 1.9X10-11 cu cm/molecule-sec at 25 deg C(SRC) that was derived using a structure estimation method(3). 2-trans-Methylcyclohexanol does not contain chromophores that absorb at wavelengths >290 nm(4) and therefore is not expected to be susceptible to direct photolysis by sunlight(SRC).
[(1) Bidleman TF; Environ Sci Technol 22: 361-367 (1988) (2) Daubert TE, Danner RP; Physical and Thermodynamic Properties of Pure Chemicals Data Compilation. Washington, DC: Taylor and Francis (1989) (3) Meylan WM, Howard PH; Chemosphere 26: 2293-99 (1993) (4) Lyman WJ et al; Handbook of Chemical Property Estimation Methods. Washington, DC: Amer Chem Soc pp. 8-12 (1990)] **PEER REVIEWED**

Environmental Biodegradation:
AEROBIC: Methylcyclohexanol is a commercial mixture that contains isomers of 2-, 3-, and 4-methylcyclohexanol, which are expected to have behave in a similar manner in the environment(SRC). 4-Methylcyclohexanol degraded 94.0% based on COD removal in a 5-day screening test using an acclimated activated sludge inoculum(1).
[(1) Pitter P; Water Res 10: 231-5 (1976)] **PEER REVIEWED**

Environmental Abiotic Degradation:
Methylcyclohexanol is a commercial mixture that contains isomers of 2-, 3-, and 4-methylcyclohexanol, which are expected to have behave in a similar manner in the environment(SRC). The rate constant for the vapor-phase reaction of trans-2-methylcyclohexanol with photochemically-produced hydroxyl radicals has been estimated as 1.9X10-11 cu cm/molecule-sec at 25 deg C(SRC) using a structure estimation method(1). This corresponds to an atmospheric half-life of about 1.7 days at an atmospheric concentration of 5X10+5 hydroxyl radicals per cu cm(1). Methylcyclohexanol is not expected to undergo hydrolysis in the environment due to the lack of functional groups that hydrolyze under environmental conditions(2). Methylcyclohexanol does not contain chromophores that absorb at wavelengths >290 nm(2) and therefore is not expected to be susceptible to direct photolysis by sunlight(SRC).
[(1) Meylan WM, Howard PH; Chemosphere 26: 2293-99 (1993) (2) Lyman WJ et al; Handbook of Chemical Property Estimation Methods. Washington, DC: Amer Chem Soc pp. 7-4, 7-5, 8-12 (1990)] **PEER REVIEWED**

Environmental Bioconcentration:
Methylcyclohexanol is a commercial mixture that contains isomers of 2-, 3-, and 4-methylcyclohexanol, which are expected to have behave in a similar manner in the environment(SRC). An estimated BCF of 7.4 was calculated for trans-2-methylcyclohexanol(SRC), using a log Kow of 1.82(1) and a regression-derived equation(2). According to a classification scheme(3), this BCF suggests the potential for bioconcentration in aquatic organisms is low(SRC), provided the compound is not metabolized by the organism(SRC).
[(1) Funasaki N et al; J Chromatography 361: 33-45 (1986) (2) Meylan WM et al; Environ Toxicol Chem 18: 664-72 (1999) (3) Franke C et al; Chemosphere 29:

1501-14 (1994)] **PEER REVIEWED**

Soil Adsorption/Mobility:
Methylcyclohexanol is a commercial mixture that contains isomers of 2-, 3-, and 4-methylcyclohexanol, which are expected to have behave in a similar manner in the environment(SRC). The Koc of trans-2-methylcyclohexanol is estimated as 34(SRC), using a log Kow of 1.82(1) and a regression-derived equation(2). According to a classification scheme(3), this estimated Koc value suggests that the commercial mixture of methylcyclohexanol is expected to have very high mobility in soil.
[(1) Funasaki N et al; J Chromatography 361: 33-45 (1986) (2) US EPA; Estimation Program Interface (EPI) Suite. Ver. 4.0. Jan, 2009. Available from, as of May 6, 2010: http://www.epa.gov/oppt/exposure/pubs/episuitedl.htm (3) Swann RL et al; Res Rev 85: 17-28 (1983)] **PEER REVIEWED**

Volatilization from Water/Soil:
Methylcyclohexanol is a commercial mixture that contains isomers of 2-, 3-, and 4-methylcyclohexanol, which are expected to have behave in a similar manner in the environment(SRC). The Henry's Law constant for 2-methylcyclohexanol (mixed isomers) is 7.58X10-6 atm-cu m/mole(1). This Henry's Law constant indicates that the commercial mixture of methylcyclohexanol is expected to volatilize from water surfaces(2). Based on this Henry's Law constant, the volatilization half-life from a model river (1 m deep, flowing 1 m/sec, wind velocity of 3 m/sec)(2) is 3.5 days(SRC). The volatilization half-life from a model lake (1 m deep, flowing 0.05 m/sec, wind velocity of 0.5 m/sec)(2) is 42 days(SRC). Methylcyclohexanol is expected to volatilize from dry soil surfaces(SRC) based upon a vapor pressure of 1.2 mm Hg(3).
[(1) Altschuh J et al; Chemosphere 39: 1871-87 (1999) (2) Lyman WJ et al; Handbook of Chemical Property Estimation Methods. Washington, DC: Amer Chem Soc pp. 15-1 to 15-29 (1990) (3) Daubert TE, Danner RP; Physical and Thermodynamic Properties of Pure Chemicals Data Compilation. Washington, DC: Taylor and Francis (1989)] **PEER REVIEWED**

Environmental Water Concentrations:
GROUNDWATER: Methylcyclohexanol was identified in groundwater from a landfill well near Norman, OK. The site had permeable alluvium soil and a high water table(1).
[(1) Dunlap WJ et al; Organic Pollutants Contributed to Ground Water by a Landfill. Washington,DC: USEPA-600/0-76-004 (1976)] **PEER REVIEWED**

Effluent Concentrations:
Methylcyclohexanol has been identified in leachate from the Love Canal, Niagara Falls, New York at 8.3 mg/L(1) and the trench leachates of Maxey Flats, Kentucky and West Valley, New York low-level radioactive disposal sites at an unreported concentration(2).
[(1) MacDougall WJ, Fusco RA; J Water Pollut Control Fed 52: 2914-24 (1980) (2) Francis AJ et al; Nuclear Tech 50: 158-63 (1980)] **PEER REVIEWED**

Sediment/Soil Concentrations:
SEDIMENT: Methylcyclohexanol was identified in a sediment-water sample from a shallow pool of water at the Valley of the Drums hazardous waste disposal site in Louisville, KY at a concentration of 62 mg/L(1).
[(1) Stonebraker RD, Smith AJ; pp. 1-10 in Control Haz Mater Spills Proc Natl Conf (1980)] **PEER REVIEWED**

Environmental Standards & Regulations:

Chemical/Physical Properties:

Molecular Formula:
C7-H14-O
PEER REVIEWED

Molecular Weight:
114.185
[Lide, D.R. CRC Handbook of Chemistry and Physics 88TH Edition 2007-2008. CRC Press, Taylor & Francis, Boca Raton, FL 2007, p. 3-346] **PEER REVIEWED**

Color/Form:
Colorless, viscous liquid
[Lewis, R.J. Sr.; Hawley's Condensed Chemical Dictionary 15th Edition. John Wiley & Sons, Inc. New York, NY 2007., p. 824] **PEER REVIEWED**

Straw-colored liquid
[NIOSH. NIOSH Pocket Guide to Chemical Hazards & Other Databases CD-ROM. Department of Health & Human Services, Centers for Disease Prevention & Control. National Institute for Occupational Safety & Health. DHHS (NIOSH) Publication No. 2005-151 (2005)] **PEER REVIEWED**

Odor:
Aromatic, menthol-like odor
[Lewis, R.J. Sr.; Hawley's Condensed Chemical Dictionary 15th Edition. John Wiley & Sons, Inc. New York, NY 2007., p. 824] **PEER REVIEWED**

Weak coconut oil odor
[NIOSH. NIOSH Pocket Guide to Chemical Hazards & Other Databases CD-ROM. Department of Health & Human Services, Centers for Disease Prevention & Control. National Institute for Occupational Safety & Health. DHHS (NIOSH) Publication No. 2005-151 (2005)] **PEER REVIEWED**

Boiling Point:
155-180 deg C
[Lewis, R.J. Sr.; Hawley's Condensed Chemical Dictionary 15th Edition. John Wiley & Sons, Inc. New York, NY 2007., p. 824] **PEER REVIEWED**

Melting Point:
FP: -50 deg C
[Bingham, E.; Cohrssen, B.; Powell, C.H.; Patty's Toxicology Volumes 1-9 5th ed. John Wiley & Sons. New York, N.Y. (2001)., p. V6: 463] **PEER REVIEWED**

Density/Specific Gravity:
0.913 g/cu cm at 20 deg C
[Musser MT; Ullmann's Encyclopedia of Industrial Chemistry. 7th ed. (2008). New York, NY: John Wiley & Sons; Cyclohexanol and Cyclohexanone. Online Posting Date: June 15, 2000.] **PEER REVIEWED**

Octanol/Water Partition Coefficient:
log Kow = 1.82 /trans-2-methylcyclohexanol/
[Funasaki N et al; J Chromatogr 361: 33-45 (1986)] **PEER REVIEWED**

Solubilities:
3-4% in water at 20 deg C
[Clayton, G. D. and F. E. Clayton (eds.). Patty's Industrial Hygiene and Toxicology: Volume 2A, 2B, 2C: Toxicology. 3rd ed. New York: John Wiley Sons, 1981-1982., p. 4650] **PEER REVIEWED**

Miscible with plasticizers; miscible with common solvents and gum solutions
[Clayton, G. D. and F. E. Clayton (eds.). Patty's Industrial Hygiene and Toxicology: Volume 2A, 2B, 2C: Toxicology. 3rd ed. New York: John Wiley Sons, 1981-1982., p. 4650] **PEER REVIEWED**

Spectral Properties:
Index of refraction: 1.461 at 20 deg C
[Bingham, E.; Cohrssen, B.; Powell, C.H.; Patty's Toxicology Volumes 1-9 5th ed. John Wiley & Sons. New York, N.Y. (2001)., p. V6: 463] **PEER REVIEWED**

Vapor Density:
3.93 (Air = 1)
[Lewis, R.J. Sr. (ed) Sax's Dangerous Properties of Industrial Materials. 11th Edition. Wiley-Interscience, Wiley & Sons, Inc. Hoboken, NJ. 2004., p. V3: 2418] **PEER REVIEWED**

Vapor Pressure:

1.2 mm Hg at 25 deg C /trans-2-methylcyclohexanol/; 1.45 mm Hg at 25 deg C /cis-2-methylcyclohexanol/
[Daubert, T.E., R.P. Danner. Physical and Thermodynamic Properties of Pure Chemicals Data Compilation. Washington, D.C.: Taylor and Francis, 1989.] **PEER REVIEWED**

Other Chemical/Physical Properties:
Boiling point: 165-171 deg C /Commercial mixture/
[Musser MT; Ullmann's Encyclopedia of Industrial Chemistry. 7th ed. (2008). New York, NY: John Wiley & Sons; Cyclohexanol and Cyclohexanone. Online Posting Date: June 15, 2000.] **PEER REVIEWED**

Octanol-water partition coefficient = 1.84 /cis-2-methylcyclohexanol/
[Funasaki N et al; J Chromatogr 361: 33-45 (1986)] **PEER REVIEWED**

VP: 1.5 mm Hg at 30 deg C
[Bingham, E.; Cohrssen, B.; Powell, C.H.; Patty's Toxicology Volumes 1-9 5th ed. John Wiley & Sons. New York, N.Y. (2001)., p. V6: 463] **PEER REVIEWED**

MASS: 403 (Atlas of Mass Spectral Data, John Wiley and Sons, New York) /cis-(+/-)2-methylcyclohexanol/
[Lide, D.R., G.W.A. Milne (eds.). Handbook of Data on Organic Compounds. Volume I. 3rd ed. CRC Press, Inc. Boca Raton ,FL. 1994., p. V3: 2659] **PEER REVIEWED**

IR: 13370 (Sadtler Research Laboratories IR prism collection) /cis-(+/-)2-methylcyclohexanol/
[Lide, D.R., G.W.A. Milne (eds.). Handbook of Data on Organic Compounds. Volume I. 3rd ed. CRC Press, Inc. Boca Raton ,FL. 1994., p. V3: 2659] **PEER REVIEWED**

NMR: 17117 (Sadtler Research Laboratories spectral collection) /cis-(+/-)2-methylcyclohexanol/
[Lide, D.R., G.W.A. Milne (eds.). Handbook of Data on Organic Compounds. Volume I. 3rd ed. CRC Press, Inc. Boca Raton ,FL. 1994., p. V3: 2659] **PEER REVIEWED**

IR: 13371 (Atlas of Mass Spectral Data, John Wiley and Sons, New York) /trans-(+/-)2-methylcyclohexanol/
[Lide, D.R., G.W.A. Milne (eds.). Handbook of Data on Organic Compounds. Volume I. 3rd ed. CRC Press, Inc. Boca Raton ,FL. 1994., p. V3: 2659] **PEER REVIEWED**

NMR: 17112 (Sadtler Research Laboratories spectral collection) /trans-(+/-)2-methylcyclohexanol/
[Lide, D.R., G.W.A. Milne (eds.). Handbook of Data on Organic Compounds. Volume I. 3rd ed. CRC Press, Inc. Boca Raton ,FL. 1994., p. V3: 2659] **PEER REVIEWED**

NMR: 17117 (Sadtler Research Laboratories spectral collection) /(1R-trans)-2-methylcyclohexanol/
[Lide, D.R., G.W.A. Milne (eds.). Handbook of Data on Organic Compounds. Volume I. 3rd ed. CRC Press, Inc. Boca Raton ,FL. 1994., p. V3: 2659] **PEER

REVIEWED**

IR: 401 (Atlas of Mass Spectral Data, John Wiley and Sons, New York) /(1S-cis)-3-methylcyclohexanol/
[Lide, D.R., G.W.A. Milne (eds.). Handbook of Data on Organic Compounds. Volume I. 3rd ed. CRC Press, Inc. Boca Raton ,FL. 1994., p. V3: 2660] **PEER REVIEWED**

NMR: 13372 (Sadtler Research Laboratories IR prism collection) /(1S-cis)-3-methylcyclohexanol/
[Lide, D.R., G.W.A. Milne (eds.). Handbook of Data on Organic Compounds. Volume I. 3rd ed. CRC Press, Inc. Boca Raton ,FL. 1994., p. V3: 2660] **PEER REVIEWED**

IR: 13362 (Sadtler Research Laboratories IR prism collection) /(1R-trans)-3-methylcyclohexanol/
[Lide, D.R., G.W.A. Milne (eds.). Handbook of Data on Organic Compounds. Volume I. 3rd ed. CRC Press, Inc. Boca Raton ,FL. 1994., p. V3: 2660] **PEER REVIEWED**

MASS: 40296 (NIST/EPA/MSDC Mass Spectral Database, 1990 Version); 405 (Atlas of Mass Spectral Data, John Wiley and Sons, New York) /cis-4-methylcyclohexanol/
[Lide, D.R., G.W.A. Milne (eds.). Handbook of Data on Organic Compounds. Volume I. 3rd ed. CRC Press, Inc. Boca Raton ,FL. 1994., p. V3: 2660] **PEER REVIEWED**

IR: 13373 (Sadtler Research Laboratories IR prism collection), converted from micrometers to wavenumbers /cis-4-methylcyclohexanol/
[Lide, D.R., G.W.A. Milne (eds.). Handbook of Data on Organic Compounds. Volume I. 3rd ed. CRC Press, Inc. Boca Raton ,FL. 1994., p. V3: 2660] **PEER REVIEWED**

NMR: 18480 (Sadtler Research Laboratories spectral collection) /cis-4-methylcyclohexanol/
[Lide, D.R., G.W.A. Milne (eds.). Handbook of Data on Organic Compounds. Volume I. 3rd ed. CRC Press, Inc. Boca Raton ,FL. 1994., p. V3: 2660] **PEER REVIEWED**

MASS: 40295 (NIST/EPA/MSDC Mass Spectral Database, 1990 Version) /trans-4-methylcyclohexanol/
[Lide, D.R., G.W.A. Milne (eds.). Handbook of Data on Organic Compounds. Volume I. 3rd ed. CRC Press, Inc. Boca Raton ,FL. 1994., p. V3: 2660] **PEER REVIEWED**

IR: 13363 (Sadtler Research Laboratories IR prism collection), converted from micrometers to wavenumbers /trans-4-methylcyclohexanol/
[Lide, D.R., G.W.A. Milne (eds.). Handbook of Data on Organic Compounds. Volume I. 3rd ed. CRC Press, Inc. Boca Raton ,FL. 1994., p. V3: 2660] **PEER REVIEWED**

NMR: 18479 (Sadtler Research Laboratories spectral collection) /trans-4-methylcyclohexanol/
[Lide, D.R., G.W.A. Milne (eds.). Handbook of Data on Organic Compounds. Volume I. 3rd ed. CRC Press, Inc. Boca Raton ,FL. 1994., p. V3: 2660] **PEER REVIEWED**

Henry's Law constant = 7.58X10-6 atm-cu m/mole at 25 deg C /2-methylcyclohexanol/
[Altschuh J et al; Chemosphere 39: 1871-87 (1999)] **PEER REVIEWED**

Hydroxyl radical reaction rate constant = 1.92X10-11 cu cm/molec-sec at 25 deg C (est)
[US EPA; Estimation Program Interface (EPI) Suite. Ver. 4.0. Jan, 2009. Available from, as of May 6, 2010: http://www.epa.gov/oppt/exposure/pubs/episuitedl.htm **PEER REVIEWED**

Chemical Safety & Handling:

DOT Emergency Guidelines:
/GUIDE 129: FLAMMABLE LIQUIDS (POLAR/WATER-MISCIBLE/NOXIOUS)/ Fire or Explosion: HIGHLY FLAMMABLE: Will be easily ignited by heat, sparks or flames. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back. Most vapors are heavier than air. They will spread along ground and collect in low confined areas (sewers, basements, tanks). Vapor explosion hazard indoors, outdoors or in sewers. Those substances designated with "P" may polymerize explosively when heated or involved in a fire. Runoff to sewer may create fire or explosion hazard. Containers may explode when heated. Many liquids are lighter than water. /Methylcyclohexanols/
[U.S. Department of Transportation. 2008 Emergency Response Guidebook. Washington, D.C. 2008] **PEER REVIEWED**

/GUIDE 129: FLAMMABLE LIQUIDS (POLAR/WATER-MISCIBLE/NOXIOUS)/ Health: May cause toxic effects if inhaled or absorbed through skin. Inhalation or contact with material may irritate or burn skin and eyes. Fire will produce irritating, corrosive and/or toxic gases. Vapors may cause dizziness or suffocation. Runoff from fire control or dilution water may cause pollution. /Methylcyclohexanols/
[U.S. Department of Transportation. 2008 Emergency Response Guidebook. Washington, D.C. 2008] **PEER REVIEWED**

/GUIDE 129: FLAMMABLE LIQUIDS (POLAR/WATER-MISCIBLE/NOXIOUS)/ Public Safety: CALL Emergency Response Telephone Number ... As an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all directions. Keep unauthorized personnel away. Stay upwind. Keep out of low areas. Ventilate closed spaces before entering. /Methylcyclohexanols/
[U.S. Department of Transportation. 2008 Emergency Response Guidebook. Washington, D.C. 2008] **PEER REVIEWED**

/GUIDE 129: FLAMMABLE LIQUIDS (POLAR/WATER-MISCIBLE/NOXIOUS)/ Protective Clothing: Wear positive pressure self-contained breathing apparatus (SCBA). Structural firefighters' protective clothing will only provide limited protection. /Methylcyclohexanols/
[U.S. Department of Transportation. 2008 Emergency Response Guidebook. Washington, D.C. 2008] **PEER REVIEWED**

/GUIDE 129: FLAMMABLE LIQUIDS (POLAR/WATER-MISCIBLE/NOXIOUS)/

Evacuation: Large spill: Consider initial downwind evacuation for at least 300 meters (1000 feet). Fire: If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions. /Methylcyclohexanols/
[U.S. Department of Transportation. 2008 Emergency Response Guidebook. Washington, D.C. 2008] **PEER REVIEWED**

/GUIDE 129: FLAMMABLE LIQUIDS (POLAR/WATER-MISCIBLE/NOXIOUS)/ Fire: Caution: All these products have a very low flash point: Use of water spray when fighting fire may be inefficient. Small fires: Dry chemical, CO2, water spray or alcohol-resistant foam. Do not use dry chemical extinguishers to control fires involving nitromethane or nitroethane. Large fires: Water spray, fog or alcohol-resistant foam. Do not use straight streams. Move containers from fire area if you can do it without risk. Fire involving tanks or car/trailer loads: Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Cool containers with flooding quantities of water until well after fire is out. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. ALWAYS stay away from tanks engulfed in fire. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn. /Methylcyclohexanols/
[U.S. Department of Transportation. 2008 Emergency Response Guidebook. Washington, D.C. 2008] **PEER REVIEWED**

/GUIDE 129: FLAMMABLE LIQUIDS (POLAR/WATER-MISCIBLE/NOXIOUS)/ Spill or Leak: ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). All equipment used when handling the product must be grounded. Do not touch or walk through spilled material. Stop leak if you can do it without risk. Prevent entry into waterways, sewers, basements or confined areas. A vapor suppressing foam may be used to reduce vapors. Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers. Use clean non-sparking tools to collect absorbed material. Large spills: Dike far ahead of liquid spill for later disposal. Water spray may reduce vapor; but may not prevent ignition in closed spaces. /Methylcyclohexanols/
[U.S. Department of Transportation. 2008 Emergency Response Guidebook. Washington, D.C. 2008] **PEER REVIEWED**

/GUIDE 129: FLAMMABLE LIQUIDS (POLAR/WATER-MISCIBLE/NOXIOUS)/ First Aid: Move victim to fresh air. Call 911 or emergency medical service. Give artificial respiration if victim is not breathing. Administer oxygen if breathing is difficult. Remove and isolate contaminated clothing and shoes. In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes. Wash skin with soap and water. Keep victim warm and quiet. In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin. Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed. Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves. /Methylcyclohexanols/
[U.S. Department of Transportation. 2008 Emergency Response Guidebook. Washington, D.C. 2008] **PEER REVIEWED**

Odor Threshold:
Methylcyclohexanol vapor in air can be detected and recognized by its odor when present to

extent of 500 ppm, a concentration capable of causing upper respiratory irritation.
[Clayton, G. D. and F. E. Clayton (eds.). Patty's Industrial Hygiene and Toxicology: Volume 2A, 2B, 2C: Toxicology. 3rd ed. New York: John Wiley Sons, 1981-1982., p. 4652] **PEER REVIEWED**

Skin, Eye and Respiratory Irritations:
Exposure to vapors can produce irritation to the eyes, skin, and mucous membranes. Methyl cyclohexanol is easily detected at airborne concn of 500 ppm, a concn that can produce irritant effects. /From table/
[Sullivan, J.B. Jr., G.R. Krieger (eds.). Hazardous Materials Toxicology-Clinical Principles of Environmental Health. Baltimore, MD: Williams and Wilkins, 1992., p. 1107] **PEER REVIEWED**

Fire Potential:
Combustible when exposed to heat, flame, or oxidizers.
[Lewis, R.J. Sr. (ed) Sax's Dangerous Properties of Industrial Materials. 11th Edition. Wiley-Interscience, Wiley & Sons, Inc. Hoboken, NJ. 2004., p. 2418] **PEER REVIEWED**

NFPA Hazard Classification:
Health: 0. 0 = Materials that, under emergency conditions, would offer no hazard beyond that of ordinary combustible materials.
[Pohanish, R.P. (ed). Sittig's Handbook of Toxic and Hazardous Chemical Carcinogens 5th Edition Volume 1: A-H,Volume 2: I-Z. William Andrew, Norwich, NY 2008, p. 1687] **PEER REVIEWED**

Flammability: 2. 2 = Materials that must be moderately heated or exposed to relatively high ambient temperatures before ignition can occur. Materials in this degree would not under normal conditions form hazardous atmospheres with air, but under high ambient temperatures or under moderate heating could release vapor in sufficient quantities to produce hazardous atmospheres with air.
[Pohanish, R.P. (ed). Sittig's Handbook of Toxic and Hazardous Chemical Carcinogens 5th Edition Volume 1: A-H,Volume 2: I-Z. William Andrew, Norwich, NY 2008, p. 1687] **PEER REVIEWED**

Instability: 0. 0 = Materials that in themselves are normally stable, even under fire conditions.
[Pohanish, R.P. (ed). Sittig's Handbook of Toxic and Hazardous Chemical Carcinogens 5th Edition Volume 1: A-H,Volume 2: I-Z. William Andrew, Norwich, NY 2008, p. 1687] **PEER REVIEWED**

Flash Point:
149-158 deg F (Closed cup)
[NIOSH. NIOSH Pocket Guide to Chemical Hazards & Other Databases CD-ROM. Department of Health & Human Services, Centers for Disease Prevention & Control. National Institute for Occupational Safety & Health. DHHS (NIOSH) Publication No. 2005-151 (2005)] **PEER REVIEWED**

154 DEG F (CLOSED CUP)
[Sax, N.I. and R.J. Lewis, Sr. (eds.). Hawley's Condensed Chemical Dictionary. 11th ed. New York: Van Nostrand Reinhold Co., 1987., p. 765] **PEER REVIEWED**

Autoignition Temperature:
296 deg C
[Pohanish, R.P. (ed). Sittig's Handbook of Toxic and Hazardous Chemical Carcinogens 5th Edition Volume 1: A-H,Volume 2: I-Z. William Andrew, Norwich, NY 2008, p. 1687] **PEER REVIEWED**

Fire Fighting Procedures:
Use dry chemical, carbon dioxide, or foam extinguishers. Vapors are heavier than air and will collect in low areas. Vapors may travel long distances to ignition sources and flashback. Vapors in confined areas may explode when exposed to fire. Containers may explode in fire. Storage containers and parts of containers may rocket great distances, in many directions. If material or contaminated runoff enters waterways, notify downstream users of potentially contaminated waters. Notify local health and fire officials and pollution control agencies. From a secure, explosion-proof location, use water spray to cool exposed containers. If cooling streams are ineffective (venting sound increases in volume and pitch, tank discolors or shows any signs of deforming), withdraw immediately to a secure position ... The only respirators recommended for fire fighting are self-contained breathing apparatuses that have full facepieces and are operated in a pressure-demand or other positive-pressure mode.
[Pohanish, R.P. (ed). Sittig's Handbook of Toxic and Hazardous Chemical Carcinogens 5th Edition Volume 1: A-H,Volume 2: I-Z. William Andrew, Norwich, NY 2008, p. 1688] **PEER REVIEWED**

Toxic Combustion Products:
Poisonous gases are produced in fire.
[Pohanish, R.P. (ed). Sittig's Handbook of Toxic and Hazardous Chemical Carcinogens 5th Edition Volume 1: A-H,Volume 2: I-Z. William Andrew, Norwich, NY 2008, p. 1688] **PEER REVIEWED**

Firefighting Hazards:
On heating it emits acrid fumes.
[Lewis, R.J. Sr. (ed) Sax's Dangerous Properties of Industrial Materials. 11th Edition. Wiley-Interscience, Wiley & Sons, Inc. Hoboken, NJ. 2004., p. 2418] **PEER REVIEWED**

Explosive Limits & Potential:
Above 41 deg C explosive vapor/air mixtures may be formed.
[International Program on Chemical Safety/Commission of the European Communities; International Chemical Safety Card on Methylcyclohexanol (March 2001). Available from, as of July 26, 2010: http://www.inchem.org/pages/icsc.html **PEER REVIEWED**

Hazardous Reactivities & Incompatibilities:
Forms explosive mixture with air. Contact with strong oxidizers may cause fire and explosions. Attacks some plastics, rubber, and coatings.
[Pohanish, R.P. (ed). Sittig's Handbook of Toxic and Hazardous Chemical Carcinogens 5th Edition Volume 1: A-H,Volume 2: I-Z. William Andrew, Norwich, NY 2008, p. 1687] **PEER REVIEWED**

Immediately Dangerous to Life or Health:
500 ppm
[NIOSH. NIOSH Pocket Guide to Chemical Hazards & Other Databases CD-ROM. Department of Health & Human Services, Centers for Disease Prevention & Control. National Institute for Occupational Safety & Health. DHHS (NIOSH) Publication No. 2005-151 (2005)] **PEER REVIEWED**

Protective Equipment & Clothing:
Wear appropriate personal protective clothing to prevent skin contact.
[NIOSH. NIOSH Pocket Guide to Chemical Hazards & Other Databases CD-ROM. Department of Health & Human Services, Centers for Disease Prevention & Control. National Institute for Occupational Safety & Health. DHHS (NIOSH) Publication No. 2005-151 (2005)] **PEER REVIEWED**

Wear appropriate eye protection to prevent eye contact.
[NIOSH. NIOSH Pocket Guide to Chemical Hazards & Other Databases CD-ROM. Department of Health & Human Services, Centers for Disease Prevention & Control. National Institute for Occupational Safety & Health. DHHS (NIOSH) Publication No. 2005-151 (2005)] **PEER REVIEWED**

Respirator Recommendations: Up to 500 ppm

Assigned Protection Factor (APF)	**Respirator Recommendation**
APF = 10	Any supplied-air respirator. Substance reported to cause eye irritation or damage; may require eye protection.
APF = 50	Any self-contained breathing apparatus with a full facepiece.

[NIOSH. NIOSH Pocket Guide to Chemical Hazards & Other Databases CD-ROM. Department of Health & Human Services, Centers for Disease Prevention & Control. National Institute for Occupational Safety & Health. DHHS (NIOSH) Publication No. 2005-151 (2005)] **PEER REVIEWED**

Respirator Recommendations: Emergency or planned entry into unknown concentrations or IDLH conditions:

Assigned Protection Factor (APF)	**Respirator Recommendation**
APF = 10,000	Any self-contained breathing apparatus that has a full facepiece

	and is operated in a pressure-demand or other positive-pressure mode.
APF = 10,000	Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus.

[NIOSH. NIOSH Pocket Guide to Chemical Hazards & Other Databases CD-ROM. Department of Health & Human Services, Centers for Disease Prevention & Control. National Institute for Occupational Safety & Health. DHHS (NIOSH) Publication No. 2005-151 (2005)] **PEER REVIEWED**

Respirator Recommendations: Escape conditions:

Assigned Protection Factor (APF)	**Respirator Recommendation**
APF = 50	Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister./Any appropriate escape-type, self-contained breathing apparatus.

[NIOSH. NIOSH Pocket Guide to Chemical Hazards & Other Databases CD-ROM. Department of Health & Human Services, Centers for Disease Prevention & Control. National Institute for Occupational Safety & Health. DHHS (NIOSH) Publication No. 2005-151 (2005)] **PEER REVIEWED**

Preventive Measures:

SRP: The scientific literature for the use of contact lenses in industry is conflicting. The benefit or detrimental effects of wearing contact lenses depend not only upon the substance, but also on factors including the form of the substance, characteristics and duration of the exposure, the uses of other eye protection equipment, and the hygiene of the lenses. However, there may be individual substances whose irritating or corrosive properties are such that the wearing of contact lenses would be harmful to the eye. In those specific cases, contact lenses should not be worn. In any event, the usual eye protection equipment should be worn even when contact lenses are in place.
PEER REVIEWED

The worker should immediately wash the skin when it becomes contaminated.
[NIOSH. NIOSH Pocket Guide to Chemical Hazards & Other Databases CD-ROM. Department of Health & Human Services, Centers for Disease Prevention & Control. National Institute for Occupational Safety & Health. DHHS (NIOSH) Publication No. 2005-151 (2005)] **PEER REVIEWED**

SRP: Contaminated protective clothing should be segregated in a manner that results in no direct personal contact by personnel who handle, dispose of, or clean the clothing. Quality assurance procedures to confirm the efficacy of the cleaning procedures should be implemented prior to the

decontaminated protective clothing being returned for reuse by the workers. Contaminated clothing (including shoes/socks) should not be taken home at end of shift, but should remain at employee's place of work for cleaning.
PEER REVIEWED

SRP: Wastewater from contaminant suppression, cleaning of protective clothing/equipment, or contaminated sites should be contained and evaluated for subject chemical or decomposition product concentrations. Concentrations shall be lower than applicable environmental discharge or disposal criteria. Alternatively, pretreatment and/or discharge to a permitted wastewater treatment facility is acceptable only after review by the governing authority and assurance that "pass through" violations will not occur. Due consideration shall be given to remediation worker exposure (inhalation, dermal and ingestion) as well as fate during treatment, transfer and disposal. If it is not practicable to manage the chemical in this fashion, it must be evaluated in accordance with EPA 40 CFR Part 261, specifically Subpart B, in order to determine the appropriate local, state and federal requirements for disposal.
PEER REVIEWED

Work clothing that becomes wet or significantly contaminated should be removed and replaced.
[NIOSH. NIOSH Pocket Guide to Chemical Hazards & Other Databases CD-ROM. Department of Health & Human Services, Centers for Disease Prevention & Control. National Institute for Occupational Safety & Health. DHHS (NIOSH) Publication No. 2005-151 (2005)] **PEER REVIEWED**

Shipment Methods and Regulations:
No person may /transport,/ offer or accept a hazardous material for transportation in commerce unless that person is registered in conformance ... and the hazardous material is properly classed, described, packaged, marked, labeled, and in condition for shipment as required or authorized by ... /the hazardous materials regulations (49 CFR 171-177)./
[49 CFR 171.2 (7/1/96)] **PEER REVIEWED**

The International Air Transport Association (IATA) Dangerous Goods Regulations are published by the IATA Dangerous Goods Board pursuant to IATA Resolutions 618 and 619 and constitute a manual of industry carrier regulations to be followed by all IATA Member airlines when transporting hazardous materials.
[IATA. Dangerous Goods Regulations. 38th ed. Montreal, Canada and Geneva, Switzerland: International Air Transport Association, Dangerous Goods Board, January, 1997., p. 178] **PEER REVIEWED**

The International Maritime Dangerous Goods Code lays down basic principles for transporting hazardous chemicals. Detailed recommendations for individual substances and a number of recommendations for good practice are included in the classes dealing with such substances. A general index of technical names has also been compiled. This index should always be consulted when attempting to locate the appropriate procedures to be used when shipping any substance or article.
[IMDG; International Maritime Dangerous Goods Code; International Maritime Organization p.3145-1 (1988)] **PEER REVIEWED**

Storage Conditions:
Methylcyclohexanol must be stored to avoid contact with strong oxidizers (such as peroxides, chlorates, perchlorates, nitrates, and permanganates), since violent reactions occur. Sources of ignition, such as smoking and open flames, are prohibited where methylcyclohexanol is used, handled, or stored in a manner that could create a potential fire or explosion hazard.
[Pohanish, R.P. (ed). Sittig's Handbook of Toxic and Hazardous Chemical Carcinogens 5th Edition Volume 1: A-H,Volume 2: I-Z. William Andrew, Norwich, NY 2008, p. 1688] **PEER REVIEWED**

Cleanup Methods:
Spill handling: evacuate and restrict persons not wearing protective equipment from area of spill or leak until cleanup is complete. Remove all ignition sources. Ventilate area of spill or leak. Absorb liquids in vermiculite, dry sand, earth, peat, carbon, or a similar material and deposit in sealed containers. Keep this chemical out of a confined space, such as a sewer, because of the possibility of an explosion, unless the sewer is designed to prevent the build-up of explosive concentrations. It may be necessary to contain and dispose of this chemical as a hazardous waste. If material or contaminated runoff enters waterways, notify downstream users of potentially contaminated waters. Contact your Department of Environmental Protection or your regional office of the federal EPA for specific recommendations.
[Pohanish, R.P. (ed). Sittig's Handbook of Toxic and Hazardous Chemical Carcinogens 5th Edition Volume 1: A-H,Volume 2: I-Z. William Andrew, Norwich, NY 2008, p. 1688] **PEER REVIEWED**

Disposal Methods:
SRP: The most favorable course of action is to use an alternative chemical product with less inherent propensity for occupational harm/injury/toxicity or environmental contamination. Recycle any unused portion of the material for its approved use or return it to the manufacturer or supplier. Ultimate disposal of the chemical must consider: the material's impact on air quality; potential migration in soil or water; effects on animal and plant life; and conformance with environmental and public health regulations.
PEER REVIEWED

Incineration.
[Pohanish, R.P. (ed). Sittig's Handbook of Toxic and Hazardous Chemical Carcinogens 5th Edition Volume 1: A-H,Volume 2: I-Z. William Andrew, Norwich, NY 2008, p. 1688] **PEER REVIEWED**

Occupational Exposure Standards:

OSHA Standards:
Permissible Exposure Limit: Table Z-1 8-hr Time Weighted Avg: 100 ppm (470 mg/cu m).
[29 CFR 1910.1000 (USEPA); U.S. National Archives and Records Administration's Electronic Code of Federal Regulations. Available from, as of June 2, 2010: http://www.gpoaccess.gov/ecfr **PEER REVIEWED**

Vacated 1989 OSHA PEL TWA 50 ppm (235 mg/cu m) is still enforced in some states.
[NIOSH. NIOSH Pocket Guide to Chemical Hazards. DHHS (NIOSH) Publication No. 97-140. Washington, D.C. U.S. Government Printing Office, 1997., p. 367] **PEER REVIEWED**

Threshold Limit Values:
8 hr Time Weighted Avg (TWA): 50 ppm.
[American Conference of Governmental Industrial Hygienists TLVs and BEIs. Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices. Cincinnati, OH 2010, p. 40] **PEER REVIEWED**

Excursion Limit Recommendation: Excursions in worker exposure levels may exceed 3 times the TLV-TWA for no more than a total of 30 minutes during a work day, and under no circumstances should they exceed 5 times the TLV-TWA, provided that the TLV-TWA is not exceeded.
[American Conference of Governmental Industrial Hygienists TLVs and BEIs. Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices. Cincinnati, OH 2010, p. 5] **PEER REVIEWED**

NIOSH Recommendations:
Recommended Exposure Limit: 10 Hr Time-Weighted Avg: 50 ppm (235 mg/cu m).
[NIOSH. NIOSH Pocket Guide to Chemical Hazards & Other Databases CD-ROM. Department of Health & Human Services, Centers for Disease Prevention & Control. National Institute for Occupational Safety & Health. DHHS (NIOSH) Publication No. 2005-151 (2005)] **PEER REVIEWED**

Immediately Dangerous to Life or Health:
500 ppm
[NIOSH. NIOSH Pocket Guide to Chemical Hazards & Other Databases CD-ROM. Department of Health & Human Services, Centers for Disease Prevention & Control. National Institute for Occupational Safety & Health. DHHS (NIOSH) Publication No. 2005-151 (2005)] **PEER REVIEWED**

Manufacturing/Use Information:

Major Uses:
COMPONENT IN SOAP-BASED SPOT REMOVERS; CHEM INT FOR LUBRICATING OIL ADDITIVES
[SRI] **PEER REVIEWED**

Solvent for cellulose esters and ethers and for lacquers, antioxidant for lubricants, blending agent for special textile soaps and detergents.
[Fisher WB, VanPeppen JF; Kirk-Othmer Encyclopedia of Chemical Technology. (2001). New York, NY: John Wiley & Sons; Cyclohexanol and Cyclohexanone. Online Posting Date: December 4, 2000.] **PEER REVIEWED**

Used as a solvent for resins, oils, and waxes...
[Musser MT; Ullmann's Encyclopedia of Industrial Chemistry. 7th ed. (2008). New York, NY: John Wiley & Sons; Cyclohexanol and Cyclohexanone. Online Posting Date: June 15, 2000.] **PEER REVIEWED**

Manufacturers:
Methylcyclohexanol Producers (2009).

Company	Address	City, State, Country
WeylChem Frankfurt GmbH	Stroofstrasse 27	65933 Frankfurt am Main, Germany
Clariant Corporation, Pigments & Additives Division	500 Washington Street	Coventry, RI 02816-5469, U.S.A.

[Directory of World Chemical Producers, Chemical Information Services, 9101 LBJ Frwy., Suite 310, Dallas, TX 75243, (214) 349-6200. Date downloaded: September 2009. Available from, as of Dec 10, 2010: http://www.chemicalinfo.com/dwcp **PEER REVIEWED**

Methods of Manufacturing:
Hydrogenation of cresol
[Lewis, R.J. Sr.; Hawley's Condensed Chemical Dictionary 15th Edition. John Wiley & Sons, Inc. New York, NY 2007., p. 824] **PEER REVIEWED**

Catalytic oxidation of methylcyclohexane
[Lewis, R.J. Sr.; Hawley's Condensed Chemical Dictionary 15th Edition. John Wiley & Sons, Inc. New York, NY 2007., p. 824] **PEER REVIEWED**

General Manufacturing Information:
Methylcyclohexanol ... is usually available as a mixture of the cis and trans isomers of 2-, 3-, and 4-methylcyclohexanol.
[Musser MT; Ullmann's Encyclopedia of Industrial Chemistry 7th ed. (2008). NY, NY: John Wiley & Sons; Cyclohexanol and Cyclohexanone. Online Posting Date: June 15, 2000] **PEER REVIEWED**

Formulations/Preparations:
Grade: Technical
[Lewis, R.J. Sr.; Hawley's Condensed Chemical Dictionary 15th Edition. John Wiley & Sons, Inc. New York, NY 2007., p. 824] **PEER REVIEWED**

Laboratory Methods:

Analytic Laboratory Methods:
Method: NIOSH 1404, Issue 1; Procedure: gas chromatography with flame ionization detector; Analyte: methylcyclohexanol; Matrix: air; Detection Limit: 0.02 mg/sample.
[CDC; NIOSH Manual of Analytical Methods, 4th ed. Methylcyclohexanol (25639-42-3). Available from, as of June 14, 2010: http://www.cdc.gov/niosh/docs/2003-154/ **PEER REVIEWED**

Special References:

Synonyms and Identifiers:

Synonyms:
Cyclohexanol, methyl-
PEER REVIEWED

Hexahydrocresol
PEER REVIEWED

Hexahydromethylphenol
PEER REVIEWED

Methyl adronol
PEER REVIEWED

Methyl anol
PEER REVIEWED

Methylhexalin
PEER REVIEWED

Methylcyclohexane
PEER REVIEWED

Metylocykloheksanol (Polish)
PEER REVIEWED

Sextol
PEER REVIEWED

Associated Chemicals:
DL-cis-2-Methylcyclohexanol; 7443-70-1
DL-trans-2-Methylcyclohexanol; 7443-52-9
D-cis-3-Methylcyclohexanol; 5454-79-5
L-trans-3-Methylcyclohexanol; 7443-55-2

cis-4-Methylcyclohexanol; 7731-28-4
trans-4-Methylcyclohexanol; 7731-29-5

Formulations/Preparations:
Grade: Technical
[Lewis, R.J. Sr.; Hawley's Condensed Chemical Dictionary 15th Edition. John Wiley & Sons, Inc. New York, NY 2007., p. 824] **PEER REVIEWED**

Shipping Name/ Number DOT/UN/NA/IMO:
UN 2617; Methylcyclohexanols

IMO 3.3; Methylcyclohexanol

Administrative Information:

Hazardous Substances Databank Number: 2910

Last Revision Date: 20110503

Last Review Date: Reviewed by SRP on 9/23/2010

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Field Update on 2007-04-19, 1 fields added/edited/deleted
Field Update on 2007-04-19, 1 fields added/edited/deleted
Complete Update on 2005-06-23, 1 fields added/edited/deleted
Field Update on 2005-01-29, 2 fields added/edited/deleted
Complete Update on 01/24/2003, 2 fields added/edited/deleted.
Field Update on 11/08/2002, 1 field added/edited/deleted.
Complete Update on 07/22/2002, 1 field added/edited/deleted.
Complete Update on 02/13/2002, 1 field added/edited/deleted.
Complete Update on 01/14/2002, 1 field added/edited/deleted.
Complete Update on 08/09/2001, 1 field added/edited/deleted.
Complete Update on 02/08/2000, 1 field added/edited/deleted.
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Complete Update on 01/27/1999, 1 field added/edited/deleted.
Complete Update on 11/12/1998, 1 field added/edited/deleted.

Complete Update on 06/02/1998, 1 field added/edited/deleted.
Complete Update on 02/27/1998, 1 field added/edited/deleted.
Complete Update on 04/23/1997, 2 fields added/edited/deleted.
Complete Update on 10/15/1996, 1 field added/edited/deleted.
Complete Update on 07/23/1996, 1 field added/edited/deleted.
Complete Update on 06/27/1996, 1 field added/edited/deleted.
Complete Update on 06/06/1996, 1 field added/edited/deleted.
Complete Update on 02/07/1996, 44 fields added/edited/deleted.
Field Update on 01/26/1996, 1 field added/edited/deleted.
Complete Update on 01/23/1995, 1 field added/edited/deleted.
Complete Update on 12/30/1994, 1 field added/edited/deleted.
Complete Update on 07/28/1994, 1 field added/edited/deleted.
Complete Update on 03/25/1994, 1 field added/edited/deleted.
Complete Update on 08/07/1993, 1 field added/edited/deleted.
Field Update on 08/03/1993, 1 field added/edited/deleted.
Field update on 12/27/1992, 1 field added/edited/deleted.
Field Update on 04/16/1992, 1 field added/edited/deleted.
Field Update on 01/13/1992, 1 field added/edited/deleted.
Field Update on 01/15/1990, 1 field added/edited/deleted.
Complete Update on 01/11/1990, 42 fields added/edited/deleted.
Field Update on 05/05/1989, 1 field added/edited/deleted.
Field Update on 07/06/1988, 1 fields added/edited/deleted.
Field Update on 07/06/1988, 1 fields added/edited/deleted.
Field Update on 07/06/1988, 1 fields added/edited/deleted.
Field Update on 07/05/1988, 1 fields added/edited/deleted.
Field Update on 07/05/1988, 1 fields added/edited/deleted.
Complete Update on 10/03/1986
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